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| **Software Engineering Institute** | | | | | | Semester 1. of the curriculum  2023-24-1 | | | |
| Name of the subject: | | | | Code of the subject: | Credits: | Weekly hours: | | | |
|  | lec | sem | lab |
| **Introduction to MATLAB programming** | | | | NSXBM1EMNF | 4 | full-time | 0 | 0 | 2 |
| Responsible person for the subject: Dr. SERGYÁN Szabolcs | | | | | | Classification: associate professor | | | |
| Subject lecturer(s): | | | | | | | | | |
| Prerequisites: | | | |  |  | | | | |
| Way of the assessment: | | | | mid-term grade |  |  | | | |
| **Course description** | | | | | | | | | |
| Goal: | | Acquiring the fundamental knowledge and applications related to MATLAB. It serves the dual purpose of teaching computer programming and providing a background in MATLAB. | | | | | | | |
| Course description: | | Variables, arrays, vectors and matrices; MATLAB functions, loops, decisions in MATLAB. Linear algebra with MATLAB; basics of 2-D plots, data visualization: frequencies, bar charts and histograms. File input/output operations. | | | | | | | |
|  | | | | | | | | | |
| **Lecture schedule** | | | | | | | | | |
| Education week | | Topic | | | | | | | |
| 1. | | Introduction to MATLAB: variables and the workspace | | | | | | | |
| 2. | | Arrays: vectors and matrices | | | | | | | |
| 3. | | Operators, expressions and statements | | | | | | | |
| 4. | | Functions | | | | | | | |
| 5. | | Loops, repeating with *for* | | | | | | | |
| 6. | | Decisions, selections | | | | | | | |
| 7. | | 1st midterm exam | | | | | | | |
| 8. | | File input/output | | | | | | | |
| 9. | | Elements of linear algebra with MATLAB | | | | | | | |
| 10. | | Advanced matrix operations | | | | | | | |
| 11. | | Introduction to graphics: 2-D graphs | | | | | | | |
| 12. | | Frequencies, bar charts and histograms | | | | | | | |
| 13. | | 2nd midterm exam | | | | | | | |
| 14. | | Summary, evaluation | | | | | | | |
| **Mid-term requirements** | | | | | | | | | |
| Conditions for obtaining a mid-term grade/signature | | | Two midterms. | | | | | | |
| **Assessment schedule** | | | | | | | | | |
| **Education week** | | Topic | | | | | | | |
| **7** | | Elements of MatLab | | | | | | | |
| **13** | | Linear algebra and basic graphics | | | | | | | |
| **14** | | Rewriting a classroom test | | | | | | | |
| **Method used to calculate the *mid-term grade*** (to be filled out only for subjects with mid-term grades) | | | | | | | | | |
| 89-100%: excellent (5)  76-88%: good (4)  63-75%: satisfactory (3)  51-62%: pass (2)  0-50%: fail (1) | | | | | | | | | |
| **Type of the replacement** | | | | | | | | | |
| Type of the replacement of written test/mid-term grade/signature | | | One of the midterms can be replaced in the final week. | | | | | | |
| **Type of the exam** (to be filled out only for subjects with exams) | | | | | | | | | |
|  | | | | | | | | | |
| **Calculation of the exam mark** (to be filled only for subjects with exams) | | | | | | | | | |
|  | | | | | | | | | |
| **​​Final grade calculation methods:​** | | | | | | | | | |
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| **References** | | | | | | | | | |
| Obligatory: | J. Michael Fitzpatrick, Á. Lédeczi - Computer Programming with MATLAB, ebook, 2013. | | | | | | | | |
| Recommended: | B. Hahn and D. Valentine, Essential MATLAB for Engineers and Scientists, Elsevier, 2002. | | | | | | | | |
| Other references: |  | | | | | | | | |